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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,013	01/29/2004	Jay A. Morrison	2003P17582US	4733

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Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
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EXAMINER	
MAYES, MELVIN C	
ART UNIT	PAPER NUMBER
1734	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/27/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/767,013	MORRISON ET AL.	
	Examiner	Art Unit	
	Melvin Curtis Mayes	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *24* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8,10-18 and 21-23* is/are rejected.

7)☒ Claim(s) *7,9,19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/29/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

(1)

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-23, drawn to a method of manufacturing a hybrid structure, classified in class 156, subclass 89.11.

II. Claim 24, drawn to a hybrid structure, classified in class 428, subclass 701.

(2)

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the method can be used to make a hybrid structure in which the ceramic tiles are all of the same composition and size or the product as claimed can be made by boning a plurality of ceramic tiles to a preformed layer of ceramic matrix composite.

(3)

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

(4)

During a telephone conversation with John Musone on December 13, 2006, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-23. Affirmation of this election must be made by applicant in replying to this Office action. Claim 24 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102 and 103

(5)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(6)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(7)

Claims 1, 2, 5, 6, 8 and 10-12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cutler et al. 6,132,542.

Cutler et al. disclose a method of making a hybrid ceramic matrix composite (CMC) laminate comprising: providing a plurality of sintered ceramic tiles and plurality of fiber reinforced CMC layers; gluing ceramic tiles together to create mosaic ceramic layers of adjacent tiles (filling gaps with filler material as claimed in Claim 5); stacking consolidated but uncrystallized CMC layers with alternating mosaic ceramic layers; placing the stack into a

graphite mold; heating to temperature of greater than 1000°C under load to bond the glass of the CMC layers to the mosaic ceramic layers. Cutler et al. further disclose grinding ceramic tiles from an initial thickness (preparing a surface with a surface contour operation as claimed in Claim 11), coating the mosaic ceramic layers with a thin layer of matrix material to improve bonding with the CMC layers (preparing a surface by applying a surface coating material as claimed in Claim 12) and sealing the joints between adjacent tiles in each mosaic ceramic layer using a glass, glass-ceramic or ceramic (filling gaps with filler material as claimed in Claims 5, 6 and 8). As shown in Figure 3, the mosaic ceramic layers 24 are each comprised of ceramic tiles 12 of different sizes (ceramic tiles of first and second size as claimed in Claim 10) (col. 2-9).

Further, by placing the stack of CMC layers and continuous ceramic layers of adjacent ceramic tiles in a graphite mold for heating, a plurality of ceramic tiles are obviously applied to a surface of a mold, as claimed, and the mold subsequently removed, as claimed.

Filling the joints (gaps) between ceramic tiles with glass, glass-ceramic or ceramic before stacking with CMC layers or after removing the mold would have been obvious to one of ordinary skill in the art depending on whether there is an internal mosaic ceramic layer or only external mosaic ceramic layers in the stack.

(8)

Claims 13-17 and 21-23 are rejected under 35 U.S.C. 103(a) as obvious over Cutler et al. 6,132,542 in view of Able et al. 5,331,816.

Cutler et al. disclose a method of making a hybrid ceramic matrix composite (CMC) laminate comprising: providing a plurality of sintered ceramic tiles and plurality of fiber reinforced CMC layers; gluing ceramic tiles together to create mosaic ceramic layers of adjacent

tiles (filling gaps with filler material as claimed in Claims 14-16); stacking consolidated but uncrystallized CMC layers with alternating mosaic ceramic layers; placing the stack into a graphite mold; heating to temperature of greater than 1000°C under load to bond the glass of the CMC layers to the mosaic ceramic layers. Cutler et al. further disclose grinding ceramic tiles from an initial thickness (preparing a surface with a surface contour operation as claimed in Claim 22), coating the mosaic ceramic layers with a thin layer of matrix material to improve bonding with the CMC layers (preparing a surface by applying a surface coating material as claimed in Claim 23) and sealing the joints between adjacent tiles in each mosaic ceramic layer using a glass, glass-ceramic or ceramic (filling gaps with filler material as claimed in Claims 5, 6 and 8). As shown in Figure 3, the mosaic ceramic layers 24 are each comprised of ceramic tiles 12 of different sizes (ceramic tiles of first and second size as claimed in Claim 21) (col. 2-9). Cutler et al. do not disclose providing a graphite mold comprising a fugitive material and transforming the fugitive material for removing the mold.

Able teach that in making a hybrid ceramic article of ceramic tiles bonded to a ceramic matrix composite substrate, the tiles are secured to the graphite mold by a graphite adhesive which is removed by heating in air after heating to consolidate the ceramic matrix composite (col. 6, line 53 – col. 7, line 4).

It would have been obvious to one of ordinary skill in the art to have modified the method of Cutler et al. for making a hybrid laminate of ceramic tiles and ceramic matrix composite by adhering the tiles to the graphite mold by a graphite mold, as taught by Able et al., as used to secure ceramic tiles to the graphite mold during consolidating of a hybrid ceramic article of ceramic tiles and ceramic matrix composite, the adhesive removed by heating after

consolidating. By placing the stack of CMC layers and continuous ceramic layers of adjacent ceramic tiles in a graphite mold by using graphite adhesive, a plurality of ceramic tiles are obviously attached to a surface of a mold, as claimed, and the mold subsequently removed, as claimed.

Filling the joints (gaps) between ceramic tiles with glass, glass-ceramic or ceramic before stacking with CMC layers or after removing the mold, as claimed in Claims 15 and 16, would have been obvious to one of ordinary skill in the art depending on whether there is an internal mosaic ceramic layer or only external mosaic ceramic layers in the stack.

The preamble "a gas turbine combustor component..." does not limit the steps as claimed.

(9)

Claims 1-4 and 11 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Craig et al. 5,553,455.

Craig et al. disclose a method of making a hybrid ceramic article comprising: machining ceramic tiles to each have a supportive region (preparing a surface with a surface contour operation as claimed in Claim 11); bonding ceramic tiles to a foil using graphite adhesive and placing the assembly in a graphite mold (applying ceramic tiles to a mold); embedding the supportive region of the tiles in a fiber reinforced glass-ceramic matrix substrate; consolidating the substrate at 1200-1500°C and 800-1200°C to partially crystallize the matrix; and heating to remove the graphite adhesive (col. 2-6).

Further, by bonding the ceramic tiles to a foil using graphite adhesive and heating to remove the graphite adhesive, the mold comprises a fugitive material portion, as claimed in Claim 3.

(10)

Claims 1-3, 12, 13, 17 and 23 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Able et al. 5,331,816.

Able et al. disclose a method of making a gas turbine combustor liner comprising: spraying the supportive region of ceramic tiles with a graphite base mold release material (preparing a surface by applying a surface coating material as claimed in Claims 12 and 23); securing the ceramic tiles to a graphite block (mold) by a graphite adhesive (mold comprising fugitive material); embedding the supportive region of the tiles in a fiber reinforced glass-ceramic matrix substrate; consolidating the substrate at 800-1600°C to partially crystallize the matrix; and heating to remove the graphite adhesive (col. 2-7).

Further, by securing the ceramic tiles to a graphite block by a graphite adhesive and heating to remove the adhesive, the mold comprises a fugitive material and a step of transforming the fugitive material and removing the mold of performed, as claimed.

(11)

Claims 4, 11, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Able et al. as applied to claims 1 and 13, and further in view of Craig et al.

Craig et al. teach that the ceramic tiles of a gas turbine combustor liner are made by machining to provide the configuration of having a supportive region (col. 6, lines 25-26).

It would have been obvious to one of ordinary skill in the art to have modified the method of Able et al. for making a gas turbine combustor liner by providing the ceramic tiles with supportive regions by machining, as taught by Craig et al., as used to provide the configuration of ceramic tiles for a gas turbine combustor liner.

Allowable Subject Matter

(12)

Claims 7, 9, 19 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

(13)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(14)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
December 21, 2006